

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. When strikethrough cannot easily be perceived, or when five or fewer characters are deleted, [[double brackets]] are used to show the deletion. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 7, 9, 10 and 21-24 and CANCEL claims 6 and 8 in accordance with the following:

1. (Currently Amended) A method for storing data by a computer dividing redundant data into a plurality of volumes, distributing and storing the volumes in a plurality of scattered storage units through a network, comprising:

computing an evaluation value indicating desirability of each of the scattered storage units to be used based on a route evaluation table storing section information about each section in a globally distributed storage system, the section information including an identification code, a bandwidth, a communications cost and a physical distance, where the evaluation value increases as the physical distance increases while there is no substantial change in the bandwidth and the communications cost; and

selecting a plurality of storage units as an optimum storage set from among the scattered storage units based on the evaluation value;

storing a replica of a first volume in the plurality of volumes in a storage unit not selected as the storage set; and

selecting a storage unit storing a replica of the volume from among the storage units not selected as the storage set based on the evaluation value.

2. (Original) The method according to claim 1, wherein

in computing the evaluation value, a hop count from a node to which the write request is issued to each storage unit is further used.

3. (Original) The method according to claim 1, further comprising
providing the storage unit as a virtual storage unit for a user of the system.

4. (Original) The method according to claim 1, further comprising:

when the data is read from the storage set, reading from each storage unit volumes not containing a redundant portion among the plurality of volumes written to the storage set; and reconstituting the data using the read volumes.

5. (Original) The method according to claim 3, further comprising:

when the data is read, computing a use priority indicating high response based on the bandwidth and the cost for each storage unit; and

determining which volumes among the plurality of volumes are to be read from each storage unit as volumes not containing a redundant portion based on the use priority.

6. (Canceled)

7. (Currently Amended) The method according to claim-6_1, further comprising

when a replica of the first volume is generated, based on the evaluation value selecting a method from between two generating method based on the evaluation value, that is, replicating the first volume from a storage unit storing the first volume, and regenerating the first volume using redundancy from volumes other than the first volume in the plurality of volumes.

8. (Canceled)

9. (Currently Amended) The method according to claim-6_1, further comprising

writing a volume in a multicast system to a plurality of storage units storing the same volume.

10. (Currently Amended) The method according to claim-6_1, wherein

when a replica of the first volume is written to a storage unit, a writing process is performed in plural operations.

11. (Original) The method according to claim 1, further comprising

when a fault occurs in the first storage unit in the storage set, limiting a write to other storage units in the storage set.

12. (Original) The method according to claim 1, further comprising
when a fault occurs in a third storage unit in the storage set, selecting based on the evaluation value a fourth storage unit other than a storage unit selected as the storage set instead of the third storage unit.
13. (Original) The method according to claim 1, further comprising:
after selecting the storage set, reselecting a storage set in each node at a predetermined timing; and
when there is a volume not used by any node as a result of reselection, deleting the volume from a storage unit.
14. (Original) The method according to claim 13, wherein
the predetermined timing refers to a predetermined period after previous selection or a timing of changing a state of a volume.
15. (Original) The method according to claim 1, further comprising:
after reading the data, temporarily storing the data for a predetermined period in an arbitrary storage unit; and
when data is read within the predetermined period, reading temporarily stored data from the storage unit.
16. (Original) A method according to claim 1, further comprising:
temporarily storing data specified in a write request within a predetermined period in a temporary storage area;
retrieving data from the temporary storage area after the predetermined period;
dividing the data into a plurality of volumes; and
writing the plurality of volumes in the storage set.
17. (Original) The method according to claim 15, further comprising
when a reading or writing process is performed on data including the temporarily stored data, reading or writing only a portion of data not containing the temporarily stored data.

18. (Original) The method according to claim 1, further comprising when the plurality of volumes are written to the storage set, prohibiting a writing process on the storage set until a write is completed for a node to which the write request is issued.

19. (Original) The method according to claim 18, further comprising determining a storage unit as a representative storage unit from among a plurality of storage units storing the same volumes, wherein:

in prohibiting a writing process in the plurality of storage units,

prohibiting a writing process to the representative storage unit is performed by a node to which the write request is issued; and

prohibiting a writing process to a storage unit other than the representative storage unit is performed by the representative storage unit.

20. (Original) The method according to claim 19, wherein the representative storage unit is a storage unit for storing a volume as original data.

21. (Currently Amended) A computer-readable storage medium storing a program used to direct a computer to control processes of dividing redundant data into a plurality of volumes in a system comprising storage units scattered through a network, and distributing and storing volumes in a plurality of storage units, comprising:

computing an evaluation value indicating desirability of each of the scattered storage units to be used based on a route evaluation table storing section information about each section in a globally distributed storage system, the section information including an identification code, a bandwidth, a communications cost and a physical distance, where the evaluation value increases as the physical distance increases while there is no substantial change in the bandwidth and the communications cost; and

selecting a plurality of storage units as an optimum storage set from among the scattered storage units based on the evaluation value;

storing a replica of a first volume in the plurality of volumes in a storage unit not selected as the storage set; and

selecting a storage unit storing a replica of the volume from among the storage units not selected as the storage set based on the evaluation value.

22. (Currently Amended) A control device which controls dividing redundant data into a plurality of volumes in a system having scattered storage units through a network, and distributing and storing volumes in a plurality of storage units, comprising:

route management means for computing an evaluation value indicating desirability of each of the scattered storage units to be used based on a route evaluation table storing section information about each section in a globally distributed storage system, the section information including an identification code, a bandwidth, a communications cost and a physical distance, ~~where the evaluation value increases as the physical distance increases while there is no substantial change in the bandwidth and the communications cost;~~ and

storage set management means for selecting a plurality of storage units as an optimum storage set from among the scattered storage units based on the evaluation value;

storing means for storing a replica of a first volume in the plurality of volumes in a storage unit not selected as the storage set; and

selecting means for selecting a storage unit storing a replica of the volume from among the storage units not selected as the storage set based on the evaluation value.

23. (Currently Amended) A control device which controls dividing redundant data into a plurality of volumes in a system having scattered storage units through a network, and distributing and storing volumes in a plurality of storage units, comprising:

a route management unit computing an evaluation value indicating desirability of each of the scattered storage units to be used based on a route evaluation table storing section information about each section in a globally distributed storage system, the section information including an identification code, a bandwidth, a communications cost and a physical distance, ~~where the evaluation value increases as the physical distance increases while there is no substantial change in the bandwidth and the communications cost;~~ and

a storage set management unit selecting a plurality of storage units as an optimum storage set from among the scattered storage units based on the evaluation value;

storing means for storing a replica of a first volume in the plurality of volumes in a storage unit not selected as the storage set; and

selecting means for selecting a storage unit storing a replica of the volume from among the storage units not selected as the storage set based on the evaluation value.

24. (Currently Amended) A computer-implemented method, comprising:

selecting storage units based on an identification code, a bandwidth, a communications cost and a physical distance, the probability of selecting a storage unit increasing with a longer physical distance while there is no substantial change in the bandwidth and the communications cost; and

storing redundant data divided into volumes distributed among selected storage units connected via a computer network.